Delta Science Plan

To aid in the coordination and focus of science efforts across agencies:

"Such a plan is essential to support the adaptive management of ecosystem restoration and water management decisions in the Delta."

And therefore implement the Delta Plan and achieve the co-equal goals.

Final Draft Delta Plan

November Council Guidance

1. Define the problems to be solved by the Delta Science Plan and how they might be solved

2. Describe how science works with policy to implement *all* steps of adaptive management

3. Illustrate a new path forward

4. Next Steps

1. Problems and Solutions

Overarching Problem

- Uncoordinated mission-specific or single issue science efforts hinder efficient development of best available science to support adaptive management in the Delta

- Many resource management decisions are made in courtrooms

Overarching Solution

Delta Science Plan: a framework for conducting science that

- ✓ Organizes and integrates Delta science activities to provide ***best available science*** focused on priority management issues
- ✓ Provides approaches for communicating science to support ***adaptive management*** decision making
- ✓ Builds an open collaborative science community

One Delta, One Science

The Delta Science Plan will

- Include strategies/approaches for:
  - Addressing policymakers' Grand Challenges
  - Prioritizing research
  - Communication to support adaptive management
  - Institutional and organizational structure for science
  - Analysis and synthesis of scientific knowledge
  - Independent scientific review
  - Data management & accessibility
  - Shared computer models
  - Recommendations for an integrated monitoring approach

From Proposed Final Draft Delta Plan, GR1

The Science Plan

How.

- Infrastructure
- The People
- Governance/Framework

Policymakers' Grand Challenges

Problem: Policymakers are not confident that current Bay-Delta research is focused appropriately on their highest priority issues or "Grand Challenges." Scientists are not aware of policymakers' highest priority issues.

Solution: Innovative interface between policymakers and the science community to address priority issues. Focus and enhance collaborative research. Anticipate future challenges. Develop system understanding.

Institutional and organizational structure for science

Problem: Currently, multiple entities in the Delta undertake disparate science efforts leading to insufficient sharing of information, overlapping efforts and in some cases, conflicting science, all impediments to achieving the coequal goals.

Solution: A shared plan and vision that organizes and integrates independent science entities in the Delta toward collaborative and efficient shared science to inform policy that addresses coequal goals; accomplishing the vision of One Delta and One Science.

Shared Computer Models

Problem: Many models are being used with limited transparency of model content, such as the algorithms, inputs and scenarios being used. This lack of transparency and sharing inhibits the comparison of model results.

Solution:

'*Models are for Developing Insights*' (SWRCB Invited Panel)

Support multiple models through sharing data, algorithms, and the discussion of limitations. In doing so, facilitate community models for the future. Ensure transparency through structured model development, evaluations and training.

(Role of CWEMF)

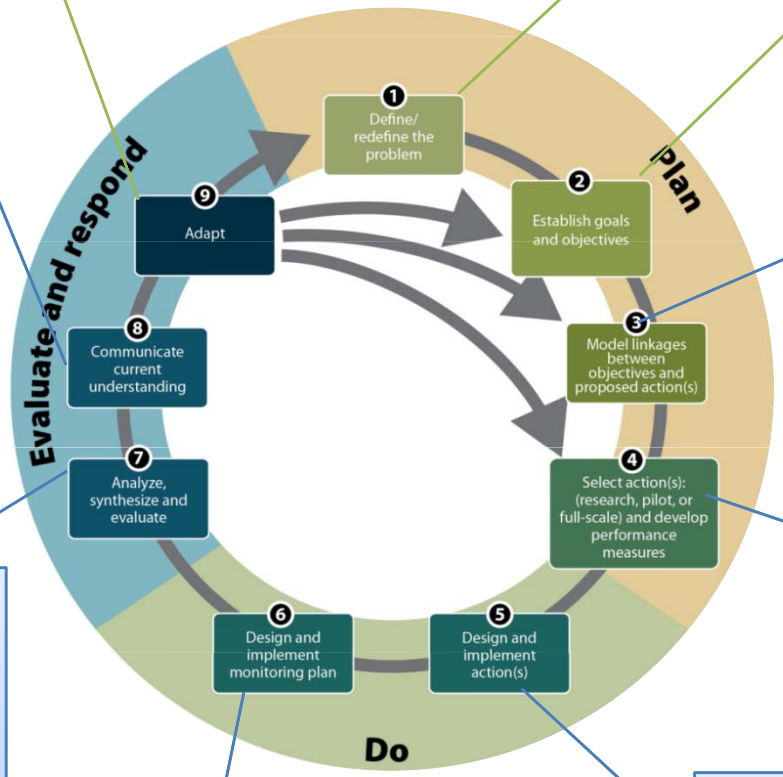
2. How science works with policy to implement all steps of adaptive management

Science Supporting AM

Inform management/policy alternatives

Provide unbiased and objective evidence for identifying and defining problems

Communicate limitations and opportunities



Continuously update state of knowledge by refining qualitative (conceptual) and quantitative (e.g., simulation) models

Identify critical uncertainties

Communicate new scientific understanding to decision makers

Use models to inform performance measure development

Analyze data, synthesize scientific information, and evaluate progress based on performance measures

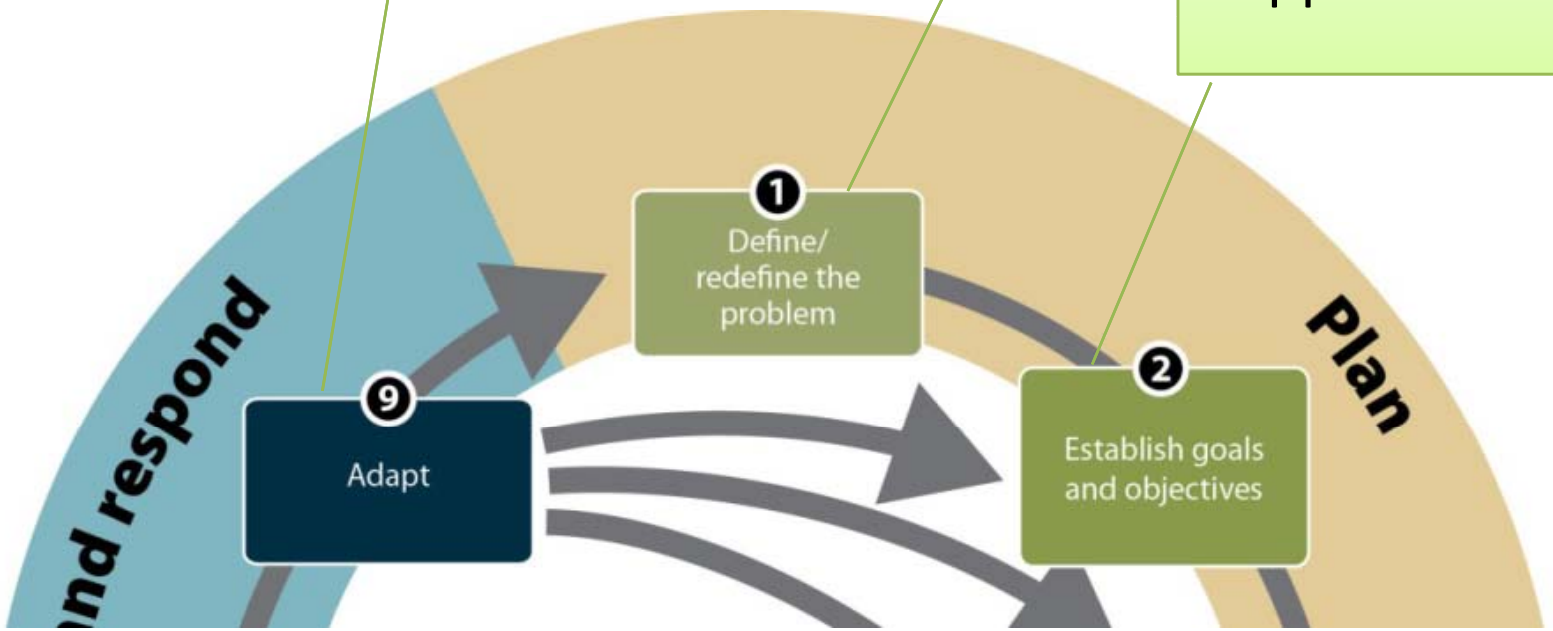
Use models to inform monitoring design. Collect, manage and share data

Design and implement Research Actions to reduce scientific uncertainties

Provide unbiased and objective evidence for identifying and defining problems

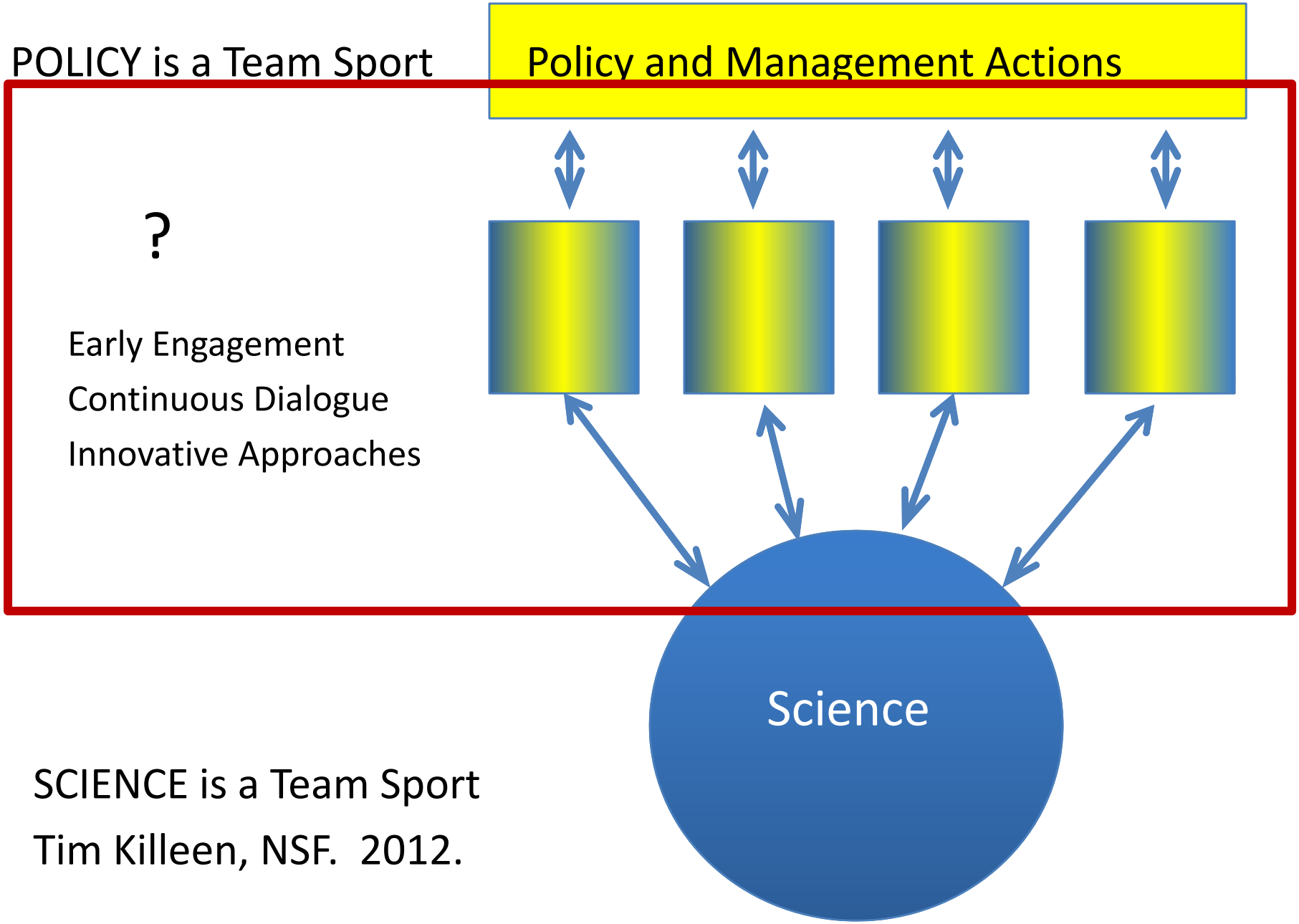
Inform management/policy alternatives

Communicate limitations and opportunities



3. Illustrate a new path forward

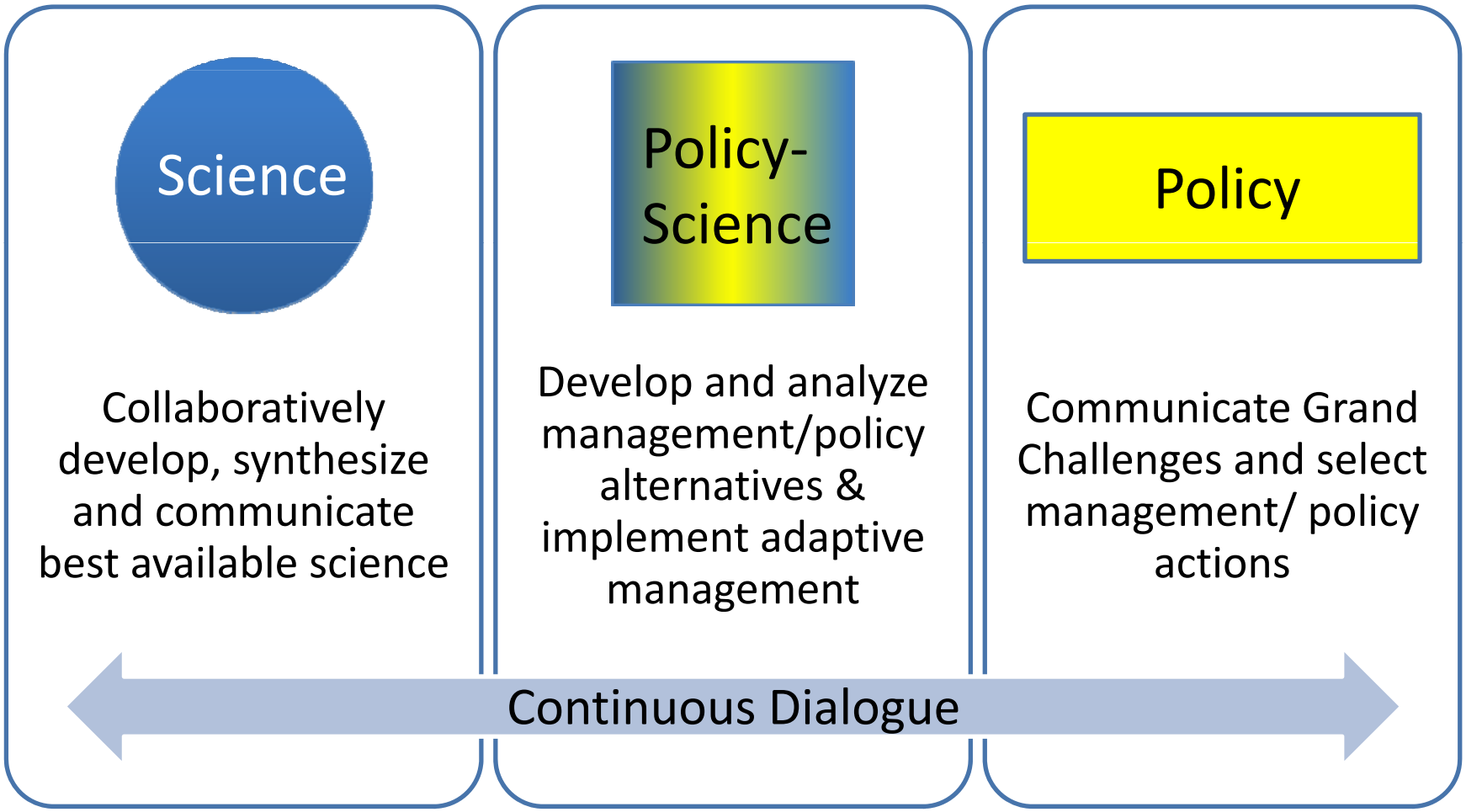
POLICY is a Team Sport

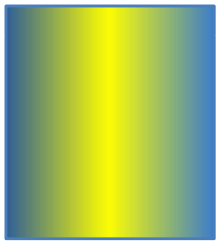


SCIENCE is a Team Sport

Tim Killeen, NSF. 2012.

How do these teams interact?





Policy-Science Teams

- Policy-science infrastructure for:
  - Coordinating and integrating science efforts
    - Delta Science Program Lead Scientist consultation with other agencies (Water Code § 85280 (b) (3))
  - Communicating Grand Challenges
    - Prioritizing research
  - Communicating current understanding including uncertainties
  - Implementing all steps of adaptive management

4. Next Steps

Next Steps

- Develop draft outline based on:
  - Council input
  - Delta policy and science community input
    - Town Hall Survey Responses
    - Lead Scientist's consultation with other agencies
- Present preliminary draft outline to the Council - January 2013